Instructions-Parts

![Graco logo]

Advanced Web Interface Kit

Installation and setup instructions to allow communication between a PC and various Graco devices, via an ethernet. For professional use only. Not for use in explosive atmospheres or hazardous locations.
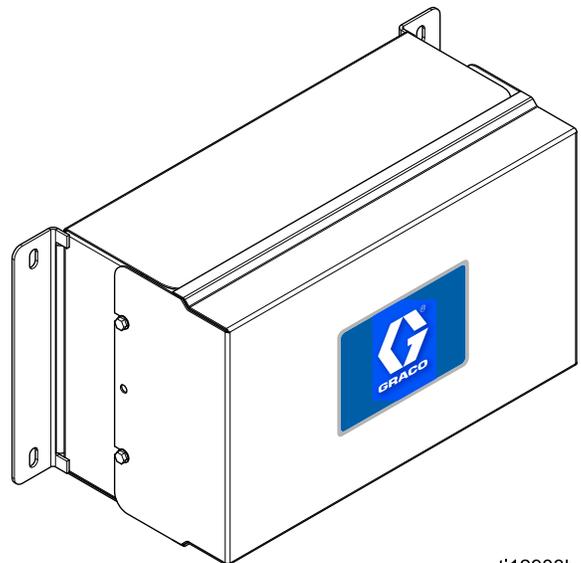
Important Safety Instructions
Read all warnings and instructions in this manual and in your system manual. **Save these instructions.**

Kit 15V337, Advanced Web Interface (AWI)

Kit 15V336, AWI Server Hub

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PROVEN QUALITY. LEADING TECHNOLOGY.

Warnings

The following warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING	
	FIRE AND EXPLOSION HAZARD Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion: • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See **Grounding** instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive. • **Stop operation immediately** if static sparking occurs or you feel a shock, Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	ELECTRIC SHOCK HAZARD This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock. • Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

⚠ WARNING

EQUIPMENT MISUSE HAZARD
Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

Related Manuals

| Manual	Description	Use For
313386	ProMix 2KS/3KS Web Interfaces	All Installation, Setup, and Operation information for ProMix 2KS and ProMix 3KS AWI or Basic Web Interface. Manual 332459 is not needed for the ProMix family.
3A2040	Informer Instructions/Parts	Follow all instructions in 332459 first, then see Appendix B for specific Informer Settings and Operation information.
3A2164	ProControl 1KE Instructions/Parts	Follow all instructions in 332459 first, then see Appendix B for specific ProControl 1KE Settings and Operation information.

Installation

Overview

NOTE: Refer to this manual first, then look in your system manual for information specific to your system (the Informer, for example, or the ProControl 1KE). **ProMix 2KS and ProMix 3KS Users:** Please refer to Manual 313386.

The Advanced Web Interface (AWI) is an accessory that works with many Graco devices and gateways. The AWI allows communication with a personal computer (PC) over an ethernet. With the AWI, users can view and change system setup parameters and create reports from a remote PC. This manual contains installation and setup information common to all devices. It includes sections on how to configure your computer, initialize the system, configure the main system settings, and set up your network.

NOTE: Screen views in this manual are shown using Microsoft Windows 7.

Location

The AWI module may be installed in a local network of Graco devices, such as a network of ProControl 1KEs. It also may be installed in a Local Area Network (LAN).

Do not install equipment approved only for non-hazardous location in a hazardous area.
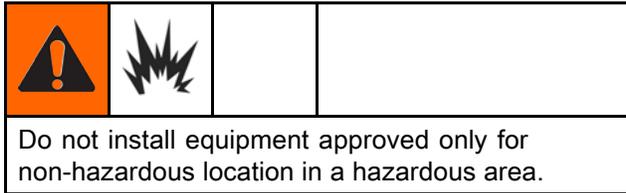
Install the AWI near your system's control module, in a non-hazardous area.

Mounting

1. See .
2. Ensure that the wall and mounting hardware are strong enough to support the weight of the equipment, fluid, hoses, and stress caused during operation.
3. Using the equipment as a template, mark the mounting holes on the wall at a convenient height for the operator and so equipment is easily accessible for maintenance.
4. Drill mounting holes in the wall. Install anchors as needed.
5. Bolt equipment securely.

Connections

Make electrical and communication connections to the AWI.

⚠️ ⚡	
• To avoid electric shock, turn off power before servicing. • Shut off power at main circuit breaker. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.	

1. Connect the AWI to power.

   a. Connect main power supply cord (A, not supplied) through the strain relief to terminals L1 (+) and N (-) on the power supply (4).

   b. Connect power cord ground wire C) to the terminal block (13).

2. Connect the AWI to another Graco device or gateway and to a PC.

   a. Shut off power to the Graco device (D). Also shut off power at main circuit breaker.

   b. Run a CAT5 cable through grommet from the ethernet port on the Graco device or gateway (D) and connect it to any port on the ethernet switch (10) in the AWI .

   c. Run another CAT5 cable from any port on the ethernet switch (10) to the ethernet port on a PC (E).
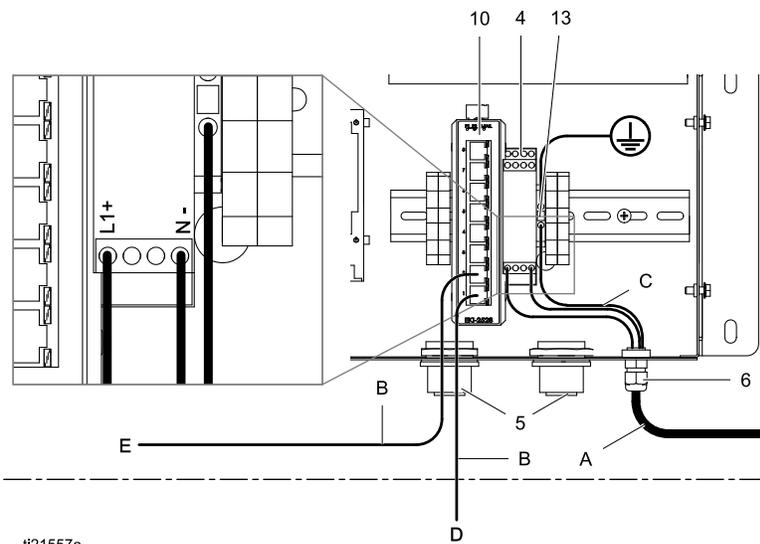
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Key — Conections and Installation Example

Supplied in AWI Module

4	POWER SUPPLY, 24 Vdc
5	GROMMET, cable entry
6	CONNECTOR, strain relief
10	SWITCH, ethernet
13	BLOCK, terminal, ground
G	AWI Module

Accessories or User-Supplied Components

A	Power Cord, user supplied
B	Cable, CAT 5, user supplied
C	Ground wire from power cord
D	Graco device or gateway
E	Personal computer
F	Fiber optic cable
H	AWI Hub
J	Informer Module
K	ProControl 1KE Module

Installation Example

This sample installation is only a guide for setting up system communication. Contact your Graco distributor for assistance in planning a system to suit your needs.
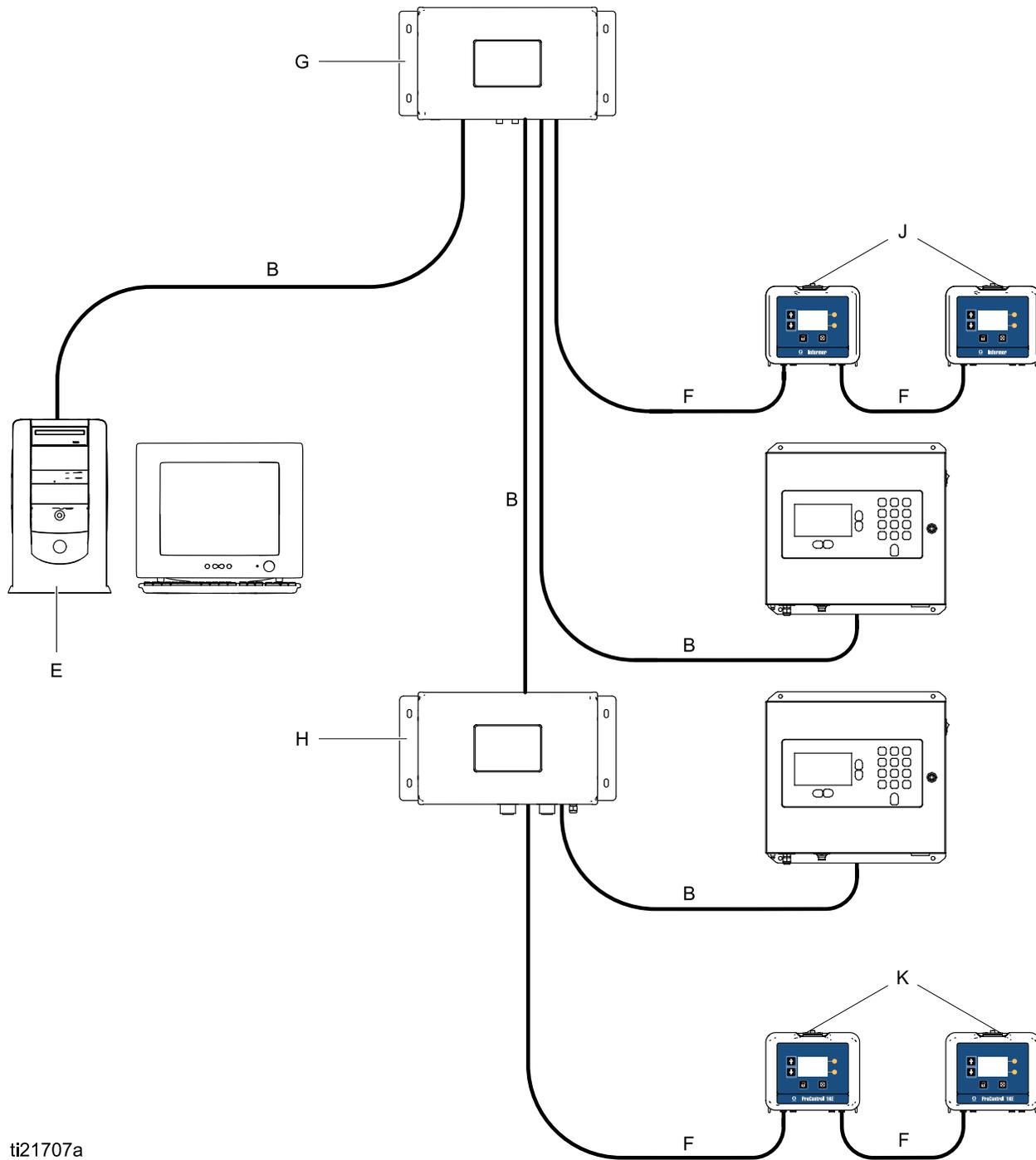
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Computer Configuration

Set Up an Automatic IP Address

The AWI requires an IP address obtained by your computer. Set up your computer to obtain one automatically.

1. Find the section for the browser that you use, then follow the steps to set your computer to obtain the IP address automatically.

   • **Windows XP**

   a. Click **Start**, then click **Control Panel**.

   b. On the **Control Panel** window, double-click **Network Connections.**

      NOTE: Check the upper left corner of the Control Panel screen. Click **Switch to Classic View** to easily locate the **Network Connections** icon.

   c. Right-click **Local Area Connection**, then click **Properties**.

   d. On the **Local Area Connection Properties** window, click **Internet Protocol (TCP/IP)**. Then click **Properties**.

   e. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.

   f. Click **OK** to save the changes.

   • **Windows 7/Vista**

   a. Click the **Windows** icon, then click **Control Panel**.

   b. Under **Network and Internet**, click **View network status and tasks**.

      NOTE: At the upper right-hand corner of the Control Panel window, you may change the window's view type. If you have **Large icons** or **Small Icons** selected, you will click on **Network and Sharing Center** instead.

   c. Click **Change adapter settings**.

   d. For Windows Vista, click **Manage network connections**.

   e. Right-click **Local Area Connection**, then click **Properties**.

   f. On the **Local Area Connection Properties** window, click **Internet Protocol Version 4 (TCP/IPv4)**. Then click **Properties**.

   g. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.

   h. Click **OK** to save the changes.

   • **Windows 8**

   a. Press the **Windows** key on your keyboard to show the **Start screen**, then click **Desktop**.

   b. Right-click the **Network** icon located on the bottom-right corner of the Desktop screen. Then click **Open Network and Sharing Center**.

   c. Click **Change adapter settings**.

   d. On the **Ethernet Properties** window, select **Internet Protocol Version 4 (TCP/IPv4)**. Then click **Properties**.

   e. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.

   f. Click **OK** to save the changes.

   • **Macintosh OS**

   a. Click the **Apple** icon, then click **System Preferences**.

   b. On the **System Preferences** window, click **Network**.

   c. On the **Network** window, look for the **Show** field and select **Built-In Ethernet**.

   d. Still on the **Network** window, look for the **TCP/IP** tab. In the **Configure IPv4** field, select **Using DHCP**.

   e. Click **Apply Now**.

2. Close your Control Panel and continue with System Initialization.

Set Up IP Address Manually

If the automatic configuration does not work or cannot be used with your system, the IP address required by the AWI can be set up manually.

1. In the previous section, find and follow the directions for your browser.

2. In the last step, choose **Use the Following IP Address**.

    Fill in the information, using the following parameters.

IP Address	192.168.178.xxx (210–224)
Gateway	192.168.178.200
Netmask	255.255.255.0

3. Then, select **Use the Following DNS Server Addresses**. Fill in this address.

DNS	192.168.178.200

System Initialization

NOTE: System initialization must be done by an administrator. This process is required only when the system is first started.

NOTE: Do not connect the system to a LAN unless it is configured properly first. By default the system comes with DHCP and DNS servers enabled.

**NOTE:** Verify that the wireless connection is turned off (disabled) before performing step 1.

1. Open a browser. Chrome 15 or above, Firefox 16 or above, or Internet Explorer 9 or above are recommended.

2. Turn off any proxy server configurations.

3. Type **http://gracoawi** or **http://192.168.178.200** in the browser address bar, and press Enter.

4. The Welcome screen will appear. Click **Next**.
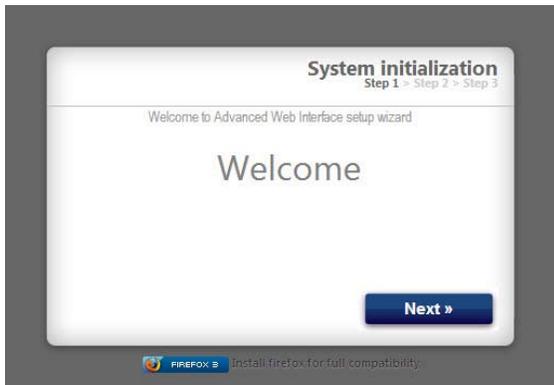
5. The Security screen will appear. The administrator must fill in all fields. Click **Next**.
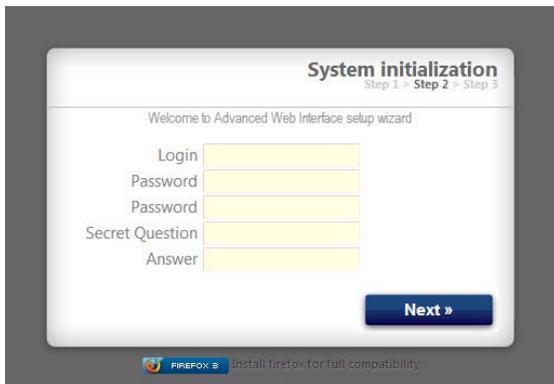
6. Initialization is complete. Click **Finish**.
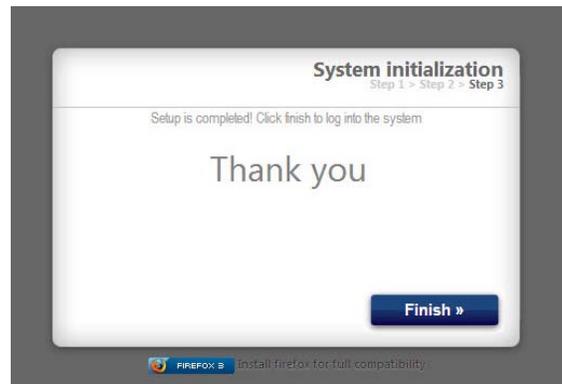
7. The Login screen will appear. Type in the login name and password you entered in Step 5. Click **Sign in**. The Network screen will appear.
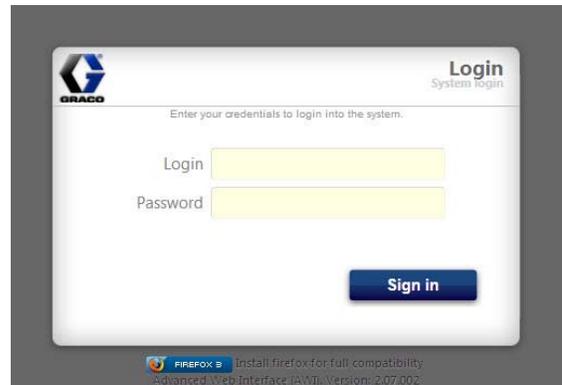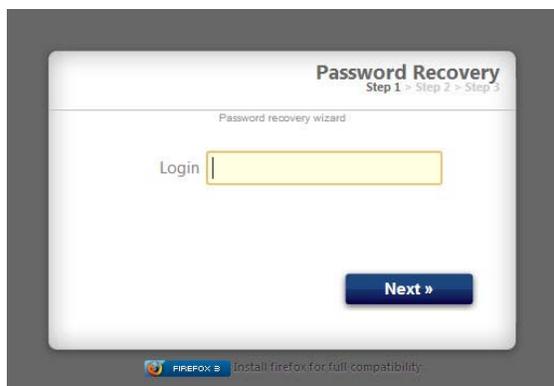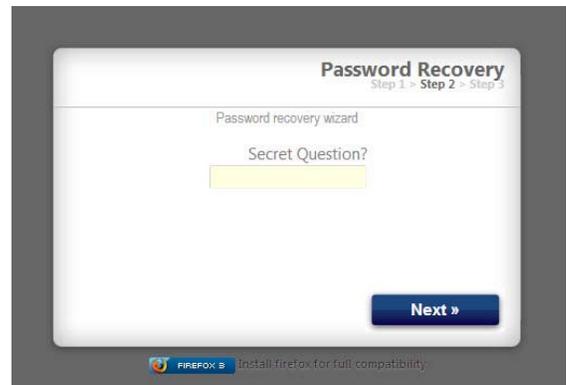
Password Recovery

1. If you type in the wrong password, sign in will be blocked. Click on the block icon ⊖ to initiate the password recovery sequence.
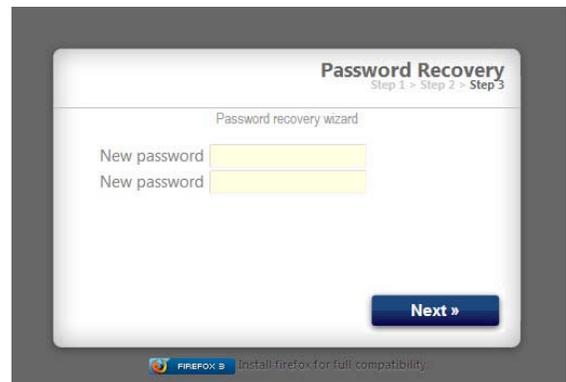

2. Type in your login name, then click **Next**.

3. Type the answer to your secret question, then click **Next**.

4. If the answer matches the one entered in Step 5, the system will prompt you for a new password. Enter the new password twice, then click **Next.** The system will return to the Login screen.

System Configuration

Settings Tab

Use the Settings tab to configure the main system settings (Time, Language, Upgrade AWI, Accounts, and Networking).

System Time

Set the correct time and synchronize time settings.

1. Edit the information in each field as required. Click **Save**.

2. Click ⇄ **Sync** to synchronize the AWI time settings with the time settings on all connected Graco devices. On the **Sync** screen, verify the current time. If correct, click **Sync**. If incorrect, click **Cancel** to return to the Settings tab and make corrections.
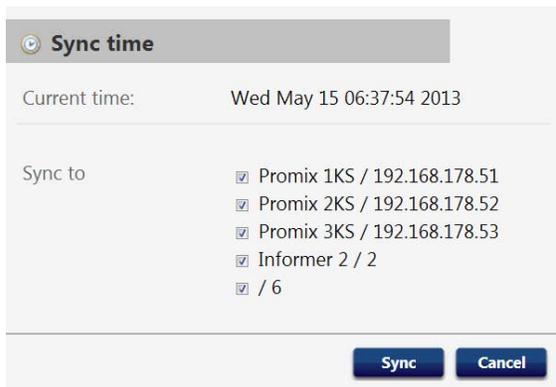
Language

Set the desired language of the screen text.

1. Click the arrow to select the desired language from the pull down menu. Options are English (default), Chinese (Simplified), Dutch, French, German, Italian, Japanese (Kanji), Korean, and Spanish.
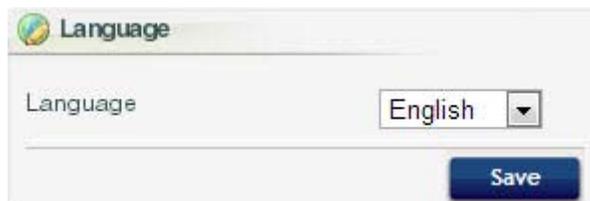
2. Click **Save.**

Upgrade AWI

Upgrade to the latest AWI software version.

Before using this screen, download the latest version of AWI software to your computer. Contact your Graco distributor for information.

1. Click ⤴ **Upgrade.**

2. On the **Upgrade** popup, click on **Choose File**.
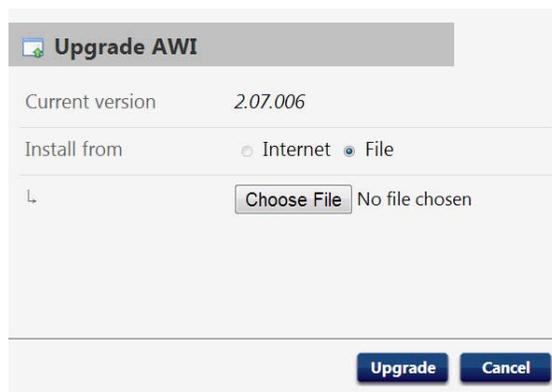
3. Locate the file you downloaded to your computer. Highlight the filename. Click **Upgrade**.

    NOTE: This process may take up to 5 minutes. The system will indicate when the upgrade process is done. If the system times out after 5 minutes, power off the unit and then power it back on and log back in.

Accounts

The first person who logs in is automatically designated as an Administrator. An Administrator uses this screen to add a user or edit user information.
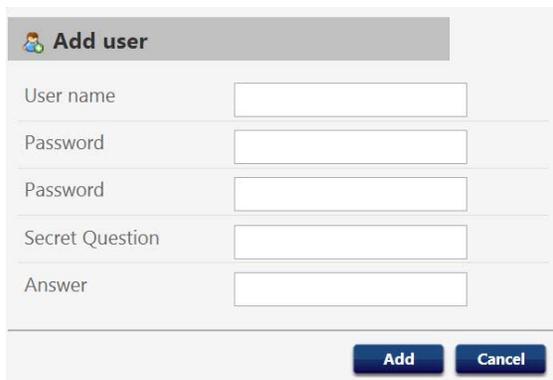
1. To add a new account, click **Add User**.

a. On the **Add user** popup window, enter information into all the data fields. Click **Add**.

b. A check mark will appear in the top right corner when the save is complete.

2. To edit an existing account, click the Edit User icon.

a. On the **Edit user** popup window, enter information into all the data fields. Click **Save**.

NOTE: Do not change all users to the status of User. At least one person must have Admin status, to add users and edit information.
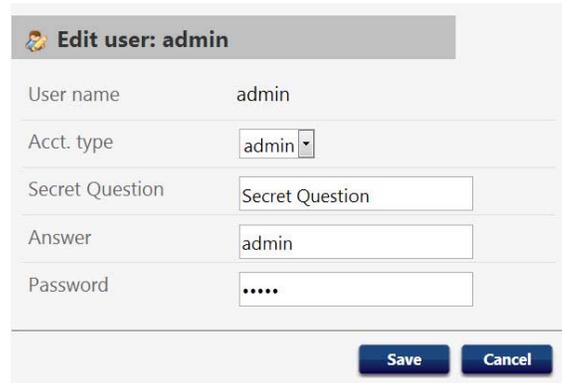
b. A check mark will appear in the top right corner when the save is complete.

3. To delete an existing account, click the Delete User icon.

Note: People who have a status of User see the following **Accounts** section, and these are the only changes available to them.

🖳 Network

Local Network Configuration

In a local network mode, the AWI module is configured for a closed network that includes a PC and Graco devices. In this mode, AWI is set to a static IP address (192.168.178.200). The system enables DHCP and DNS servers.

1. On the Settings Tab, in the Network section, select **Local network.**

2. Click **Save,** and when the confirmation screen appears, click **Confirm.**

   NOTE: Be sure there is no physical connection to another existing LAN in local network mode. It will lead to a possible disturbance to the network operation.

Manual Configuration

In manual configuration mode, the AWI module can be configured to operate on an existing local area network (LAN). In this mode, the AWI is assigned to a static IP address, gateway, and netmask chosen by the user. The system will disable DCHP and DNS servers. In addition, a virtual network interface will be enabled (IP aliasing, 192.168.178.200/255.255.255.0).

1. To change to a manual network configuration, connect and configure the AWI in local network mode. See and .

2. On the Settings Tab, in the Network section, select **Manual configuration.**

3. Enter the IP address, gateway and netmask. Contact your IS system administrator for assistance.

   NOTE: Make sure there is no other device on the network with a conflicting IP configuration.

4. Click **Save.**When the confirmation page appears, click **Confirm.**

Once the new settings are confirmed, the AWI will disconnect the user computer. Reconnect the AWI and computer. Reconfigure the user computer to match the new LAN configuration. You can then login to the AWI using the newly assigned IP address.

NOTE: If you change the addresses in this section, be certain that the new adresses will work and be sure to write them down. These addresses provide access to the AWI program. If you change these addresses and cannot remember the new ones, you will not be able to access any AWI screens.

Recover IP Settings

If you have lost your IP settings and can no longer access screens, you can force a network reset to configure the AWI to the default Local Network Configuration.

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NOTICE
To avoid damage to the circuit board, wear Part No. 112190 grounding strap, and ground appropriately.

1. Turn off power to the AWI unit.

2. On the AWI computer board (TS-7800), remove the jumper from JP1. Put it on DIO pin pair 1 (noted by dot).
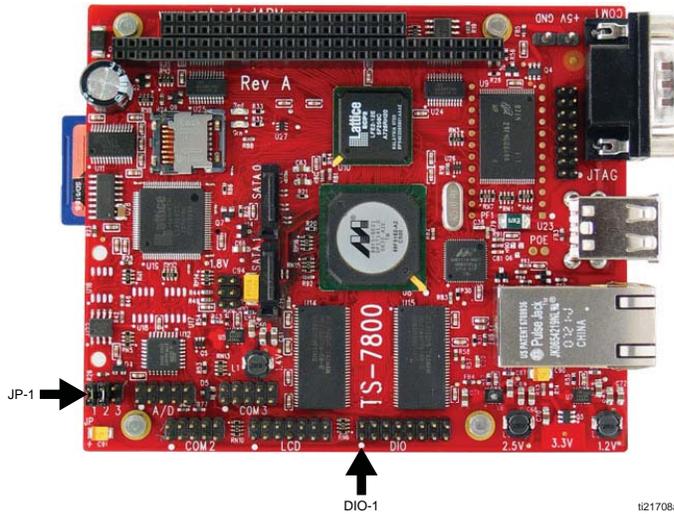
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NOTICE
Be certain you move the jumper only to DIO pin pair 1. Other placement of the jumper will damage the board.

3. Power up the AWI and wait one minute, then power it down again.

4. Remove the jumper from DIO 1. Put it back on JP1.

5. Power up the unit. The system will operate in default Local Network Configuration. To login, type **http://gracoawi** or **http://192.168.178.200** in the browser address bar. Press **Enter**.

6. The Login screen appears. Log in with the login and password you set up. Your settings will be intact.

Network Tab

The first time you click on the **Network Tab** it will show no Networked Devices.
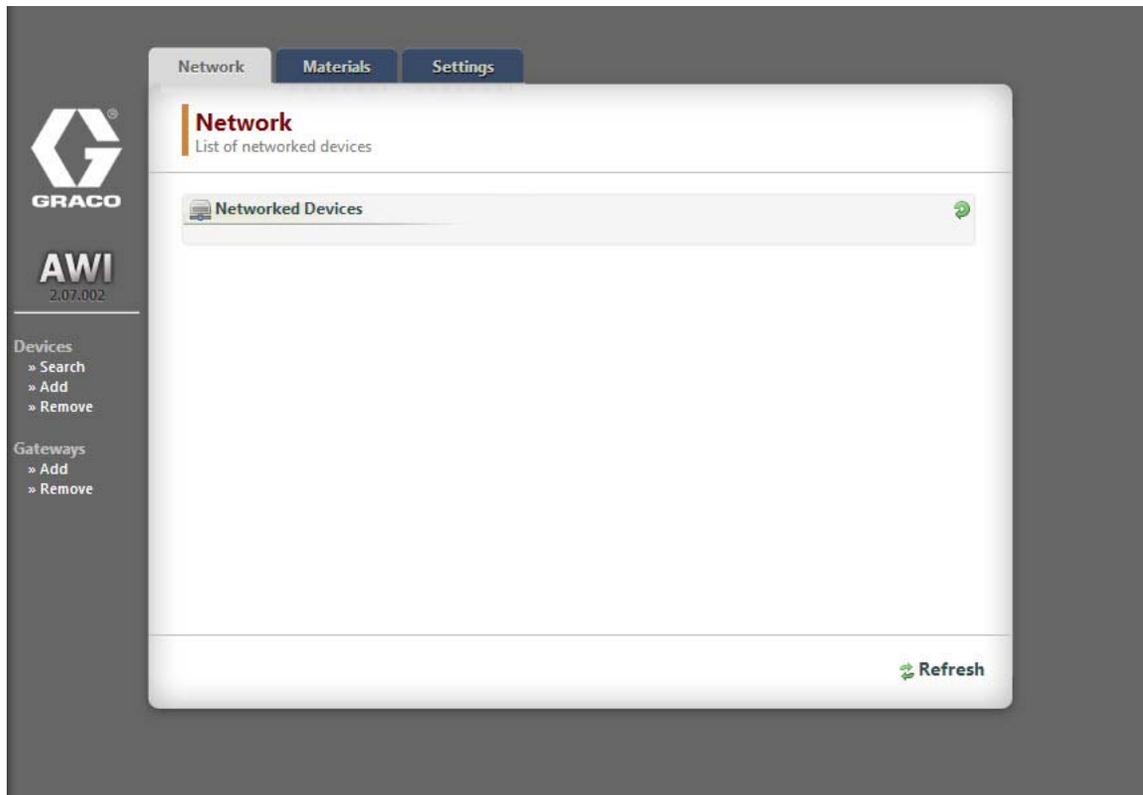
1. Click **Devices >> Search** in the column at the far left of the screen. The system will search for Graco devices that already are connected to the AWI.

   NOTE: The search may take several minutes.

   a. **Successful Search:** A window appears with a listing of all networked devices. A check is in the box for each device, indicating it will be added.
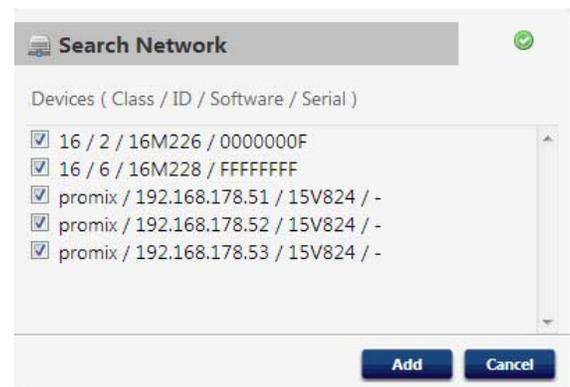
b. Click **Add.** The **Network Tab** appears, now populated with devices.
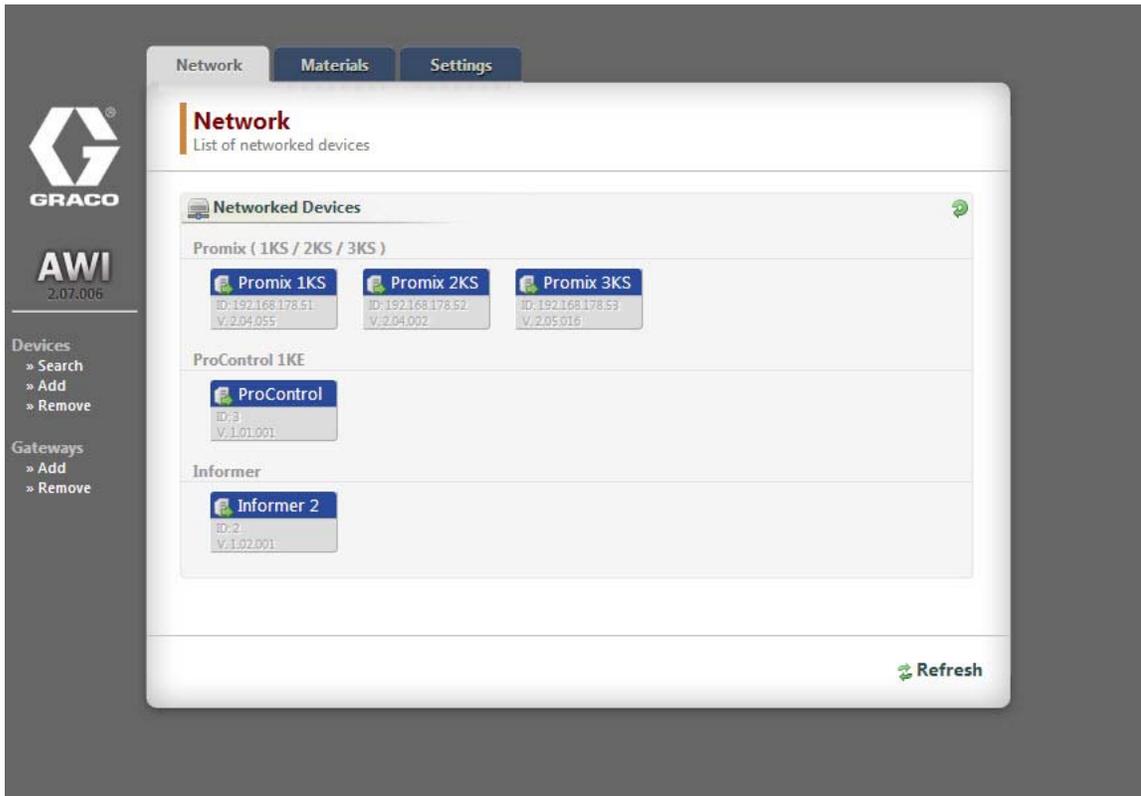
NOTE: The located devices do not have names. See your system manual for directions on how to assign names, along with other setup information specific to each Graco device.

c. Check that all device icons are blue, with the system name above. If a device is grayed out and says **Offline**, check the connection to that device, then click **Refresh**.
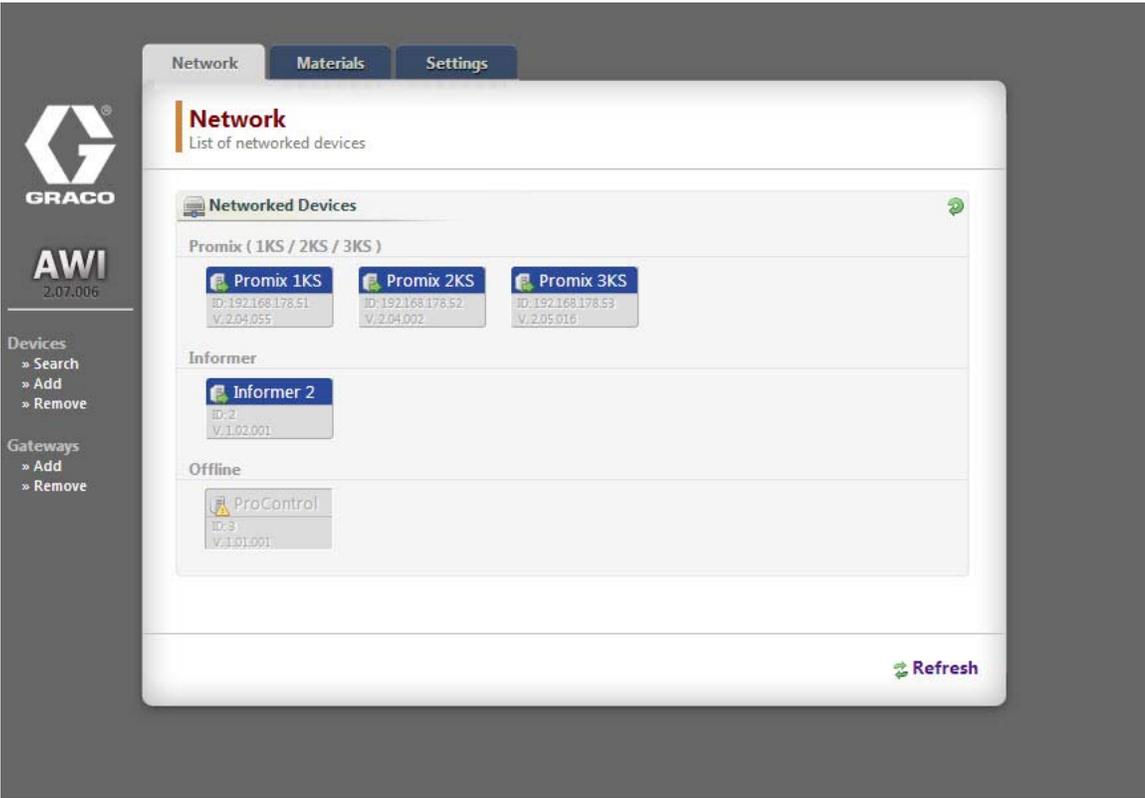
d. **Unsuccessful Search:** An exclamation point appears in the upper right hand corner of the screen, indicating the system did not locate any devices. Click **Cancel**. Add devices manually.

Add or Remove Gateways

The AWI module communicates with Graco devices through gateways installed in the system. The AWI Module comes with default gateways set. Use the **Gateways** section to add additional gateways through which the AWI will communicate with Graco devices. Add gateways before adding additional devices.

1. Click **Gateways >> Remove**. The popup window shows the gateways that already are installed. **TCP Local** is the default gateway installed for ProMix users. **Modbus TCP Local** is the default gateway installed for Informer/ProControl IKE users.

    NOTE: To use the AWI Module, Informer/ProControl 1KE users must have purchased and installed Communication Kits 24N977 and 24N978. See Graco Manual 332356 for further information.

    NOTE: Do not remove these default gateways. If they are removed accidentally, see Step 2d for information on how to restore them.

2. To add a gateway, click **Gateway >> Add**. Add a gateway if you accidentally removed the default gateway, or to extend your network by adding additional Modbus Gateway kits.

    a. **Gateway Type, ProMix:** In the drop down menu, select **tcp_local**.

    b. **Gateway Type, Informer/ProControl 1KE:** In the drop down menu, select **modbus_tcp_rtu**.

    c. In the **Name** field, type an identifying name of your choosing, for example **Factory1**, or **Line3**.

    d. In the **Address** field, type the IP address of the gateway, established when you installed that particular gateway.

       NOTE: if you are restoring the default gateway, the IP address is 192.168.178.205. Be sure to eliminate *http://.* Use the IP address only.
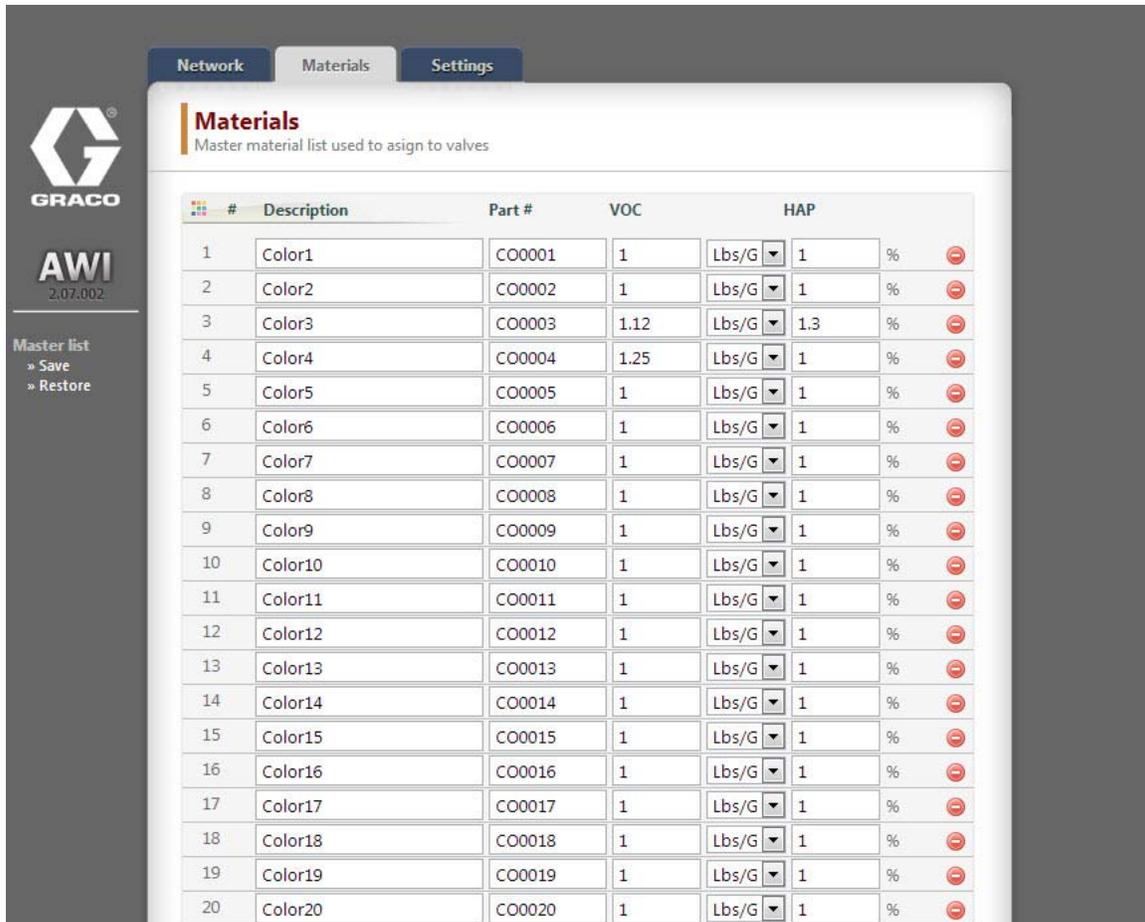
Add or Remove Devices

After gateways are set up, use the **Devices** section to add or remove Graco devices.

1. Click **Devices >> Add.**

   a. **Gateway drop down:** Choose a gateway through which the AWI will communicate with Graco devices. For example, if you are adding a ProMix, select **TCP Local**. If you are adding an Informer or a ProControl 1KE, select **Modbus TCP Local**.

   b. **Device name:** Type the name of your choosing in the field, for example, **Informer2**.

   c. **Device address, ProMix:** Type in the IP address that you set up on the EasyKey.

   d. **Device address, Informer or ProControl 1KE:** Type in the modbus addresses (1–247) that you set up.

2. Click **Add.**

   a. **Successful Add:** A check mark appears (briefly) in the upper right hand corner of the screen. Then, the **Network Tab** appears with the new device listed.

   b. **Unsuccessful Add:** An exclamation point appears in the upper right hand corner of the screen. Click **Cancel.** On the **Network Tab** select **Gateways >> Remove.** Double check that your gateway address is correct. If it is not correct, click **Remove.** Add the gateway again, with the correct address. Then try adding your device again.

Materials Tab

Use the Materials Tab to enter information on Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) for each material being used in your system, for material reporting, if supported by your Graco device. This information, and the manufacturer's part number, are available on the MSDS sheet provided by the material manufacturer.

1. Use the drop down menu to select **Lbs/Gal** or **Gram/Liter** for the VOC.

2. To add a new material, click the **Plus** button ⊕. Enter the values in the data fields.

3. To delete a material, click the **Minus** button ⊖.

4. Click **Save** to save your changes. A check mark ✓ appears when the save is complete.

	#	Description	Part #	VOC		HAP	
	1	Color1	CO0001	1	Lbs/G ▾	1	% ⊖
	2	Color2	CO0002	1	Lbs/G ▾	1	% ⊖
	3	Color3	CO0003	1.12	Lbs/G ▾	1.3	% ⊖
	4	Color4	CO0004	1.25	Lbs/G ▾	1	% ⊖
	5	Color5	CO0005	1	Lbs/G ▾	1	% ⊖
	6	Color6	CO0006	1	Lbs/G ▾	1	% ⊖
	7	Color7	CO0007	1	Lbs/G ▾	1	% ⊖
	8	Color8	CO0008	1	Lbs/G ▾	1	% ⊖
	9	Color9	CO0009	1	Lbs/G ▾	1	% ⊖
	10	Color10	CO0010	1	Lbs/G ▾	1	% ⊖
	11	Color11	CO0011	1	Lbs/G ▾	1	% ⊖
	12	Color12	CO0012	1	Lbs/G ▾	1	% ⊖
	13	Color13	CO0013	1	Lbs/G ▾	1	% ⊖
	14	Color14	CO0014	1	Lbs/G ▾	1	% ⊖
	15	Color15	CO0015	1	Lbs/G ▾	1	% ⊖
	16	Color16	CO0016	1	Lbs/G ▾	1	% ⊖
	17	Color17	CO0017	1	Lbs/G ▾	1	% ⊖
	18	Color18	CO0018	1	Lbs/G ▾	1	% ⊖
	19	Color19	CO0019	1	Lbs/G ▾	1	% ⊖
	20	Color20	CO0020	1	Lbs/G ▾	1	% ⊖

Materials
Master material list used to assign to valves

Master list
» Save
» Restore

GRACO
AWI
2.07.002

NOTE: Installation and general system configuration are complete. Refer to your system manual for operation and setup information specific to your system (the Informer, for example, or the ProControl 1KE). ProMix 2KS and ProMix 3KS Users: Please refer to Manual 313386.
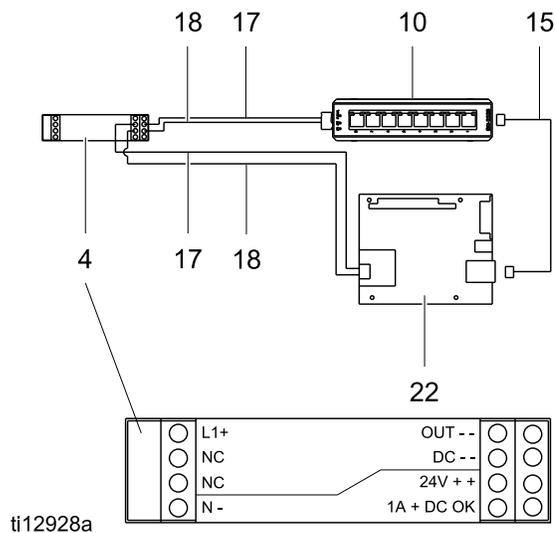
Replace AWI Board

⚠️	⚡		
• To avoid electric shock, turn off power before servicing.			
• Shut off power at main circuit breaker.			
• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.			

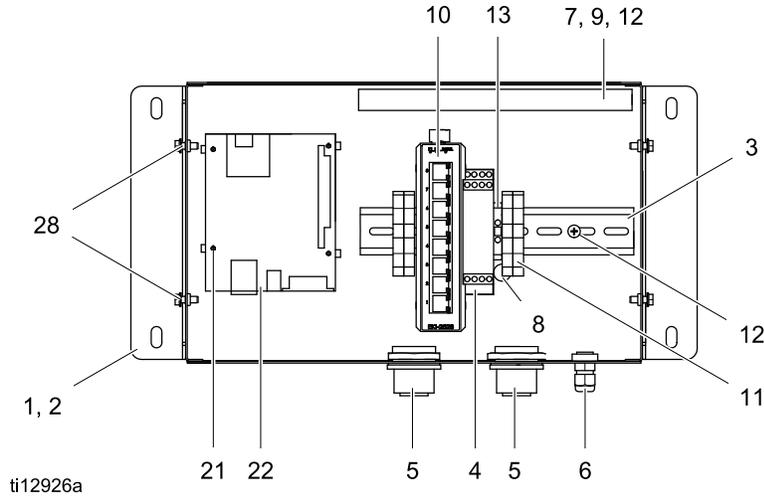| NOTICE |
|---|
| To avoid damage to the circuit board, wear Part No. 112190 grounding strap and ground appropriately. |

1. Shut off power.

2. Shut off power at main circuit breaker.

3. Open the AWI module.

4. Disconnect the cable (15) and wires (17, 18) from the board (22).

5. Remove the screws and board (22).

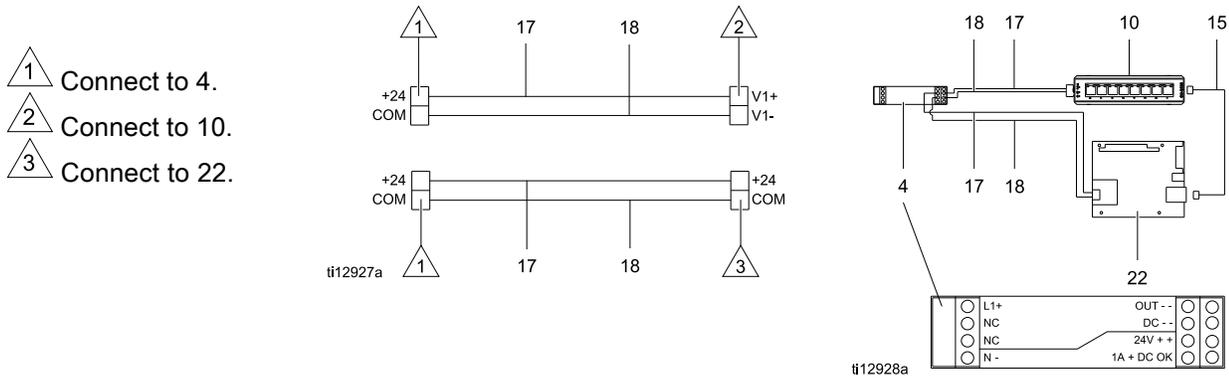6. Install the new board. reconnect the cable (15) and wires (17, 18).

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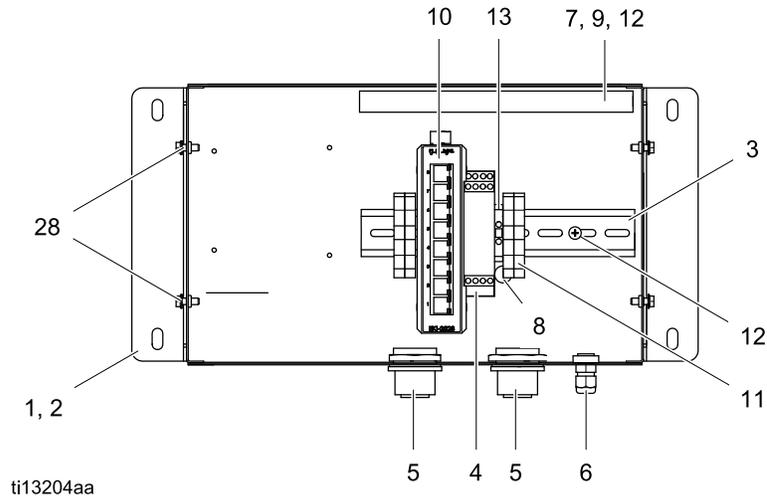
Parts

Kit 15V337 Advanced Web Interface Module

ti12926a

Wiring Diagrams

⚠1 Connect to 4.
⚠2 Connect to 10.
⚠3 Connect to 22.

ti12927a

ti12928a

Ref.	Part	Description	Qty.
1	15V339	PANEL	1
2	15T752	COVER	1
3	———	DIN RAIL	1
4	120369	SUPPLY UNIT, power, 24Vdc	1
5	15V345	GROMMET, cable entry	2
6	111987	CONNECTOR, cord strain relief	1
7	———	WIREWAY	1
8▲	186620	LABEL, ground symbol	1
9	———	COVER, wireway	1
10	15V342	SWITCH, ethernet	1
11	120838	BLOCK, clamp end	2
12	103833	SCREW, #10 —32 UNF-2A	4

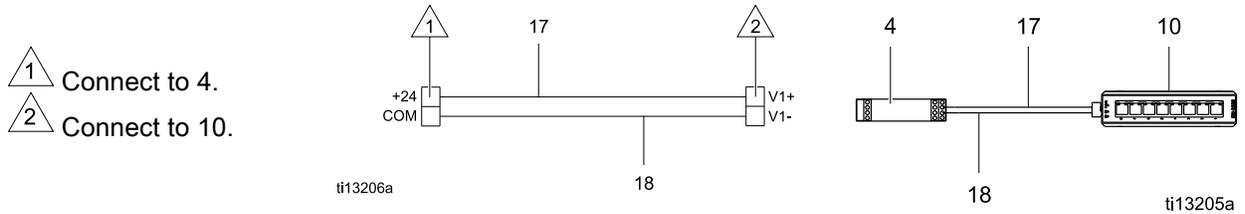| Ref.	Part	Description	Qty.
13	112443	BLOCK, terminal ground	1
15	121994	CABLE, CAT5	1
17	———	WIRE, copper, 16 ga; 9 in (230 mm)	1
18	———	WIRE, copper, 16 ga; 9 in (230 mm)	1
21	15V340	STANDOFF, board	4
22	258355	BOARD, server	1
25 ▲	15W776	LABEL, warning	1
28	———	SCREW, machine, serrated hex-head	4

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Items marked — — — are not sold separately.

Kit 15V336 Advanced Web Interface Server Hub

ti13204aa

Wiring Diagrams

⚠1 Connect to 4.

⚠2 Connect to 10.

+24
COM

V1+
V1-

ti13206a

ti13205a

Ref.	Part	Description	Qty.
1	15V339	PANEL	1
2	15T752	COVER	1
3	———	DIN RAIL	1
4	120369	SUPPLY UNIT, power, 24Vdc	1
5	15V345	GROMMET, cable entry	2
6	111987	CONNECTOR, cord strain relief	1
7	———	WIREWAY	1
8▲	186620	LABEL, ground symbol	1
9	———	COVER, wireway	1
10	15V342	SWITCH, ethernet	1
11	120838	BLOCK, clamp end	2

Ref.	Part	Description	Qty.
12	103833	SCREW, #10 —32 UNF-2A	4
13	112443	BLOCK, terminal ground	1
17	———	WIRE, copper, 18 in. (46 cm); not shown	2
18	———	WIRE, copper, 18 in. (46 cm); not shown	2
25 ▲	15W776	LABEL, warning	1
28	———	SCREW, machine, serrated hex-head	4

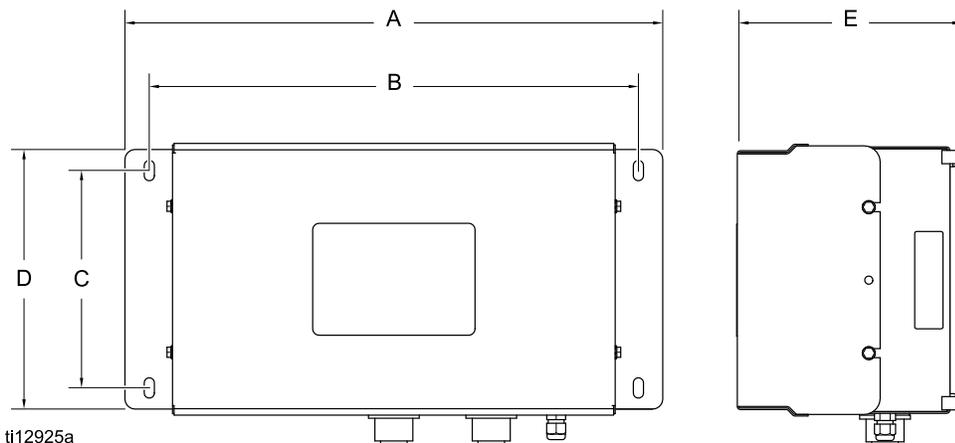▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Items marked — — — are not sold separately.

Accessories

Cables

- 121998, CAT 5, RJ45 Cable, 25 ft (7.6 m)
- 121999, CAT 5, RJ45 Cable, 50 ft (15 m)
- 15V842, CAT 5, RJ45 Cable, 100 ft (30 m)
- 15V843, CAT 5, RJ45 Cable, 200 ft (61 m)
- 16M172, Fiber Optic Cable, 50 ft (15 m)
- 16M173, Fiber Optic Cable, 100 ft (30 m)

Dimensions

ti12925a

KEY		
	in.	**mm.**
A	16.57	420.9
B	15.07	382.8
C	5.31	134.9
D	8.71	221.2
E	6.45	163.8

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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